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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/596,847

06/27/2006

Jasko Musacendic

4518-43

1292

26496 7590 05/26/2009
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EXAMINER

STEELE, JENNIFER A

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

05/26/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/596,847	Applicant(s) MUSAEFENDIC, JASKO	
	Examiner JENNIFER STEELE	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 61-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 61-80 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

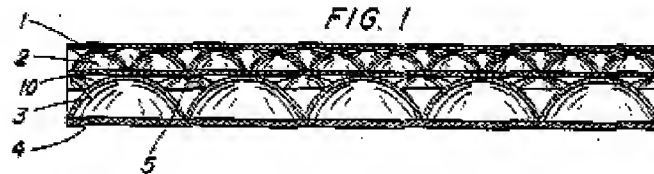
1. Claim 61 rejected under 35 U.S.C. 102(b) as being anticipated by Bjorksten et al (US 2,768,919). Claim 61 describes a high impact strength, elastic laminate system for enhancing impact resistant properties of a laminate structure, said laminate system comprising:

- a first outer layer
- a second outer layer
- at least two inner plies placed between the first and second outer layers;
- at least one dissipating element between said inner plies adapted to dissipate and redirect randomly directed local loading applied to at least one of said two outer layers, to tensile loading directed in longitudinal direction of said inner plies; and
- a polymer matrix in between said first and second layer and said first and second plies,
 - said polymer matrix absent between section of said outer layer and said at least two inner plies.

Bjorksten teaches an armor material comprised of a first and second outer layers **1** and **4** and inner layers **2, 3** and **10**. Bjorksten teaches at least two inner plies.

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Bjorksten teaches dissipating elements in the form of spherical calottes **2**, **4** and **5**. (col. 1, lines 45-64) and shown in Fig. below.



The calottes are intended to absorb a blow to the surface and dissipate the shock (col. 1, lines 64-70).

Bjorksten teaches an adhesive or grease used in assembling the layers for example a polyvinyl butyral rubber type composition. The rubber composition is equated with the polymer matrix. Bjorksten teaches a polymer in between the plies and shows the polymer is absent between sections, such as within the calottes.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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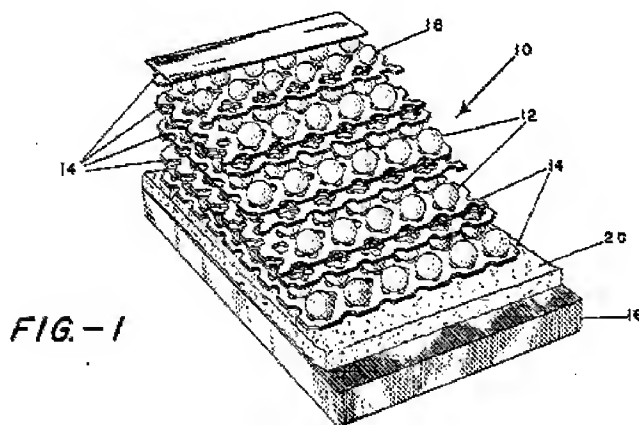
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. **Claim 61-80 rejected under 35 U.S.C. 103(a) as being unpatentable over Bjorksten et al (US 2,768,919) in view of Cook et al (US 4,179,979) and Hollis, Sr. (US 4,179,979).**

As to claim 62, Bjorksten differs and does not teach multiple layers or reinforcing ply.

Cook teaches a multiply ballistic armor system comprised of layers of hard geometric objects tensionally restrained in their layers by fiber material interwoven about the objects and the objects and fibers are bonded together by adhesive (ABST).

See Fig. 1 and 4 below.

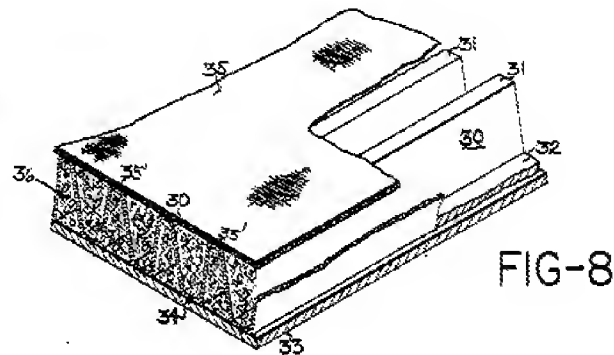
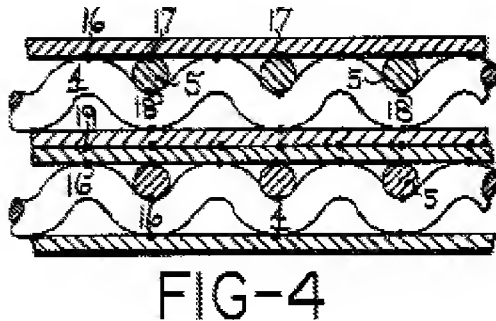


Each layer of geometric objects is equated with a ply layer. Cook teaches multiply inner plies.

Hollis teaches a protective wall structure that resists penetration and impact. Hollis teaches outer layers of multilayer cloth with at least one inner protective inner layer defined by a rib-like formation defining a series of pockets. The pockets are filled

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with a polymer self sealing core structure (ABST). The polymer is equated with Applicant's polymer matrix. The structure of Hollis is shown in embodiments in Fig. 4 and Fig. 8 below.



It would have been obvious to one of ordinary skill in the art at the time the invention was made to add additional inner plies motivated to improve the strength and dissipation of an impact on the structural laminate.

As to claim 63, Bjorksten differs and does not refer to the inner layers as reinforcing plies. Cook teaches the inner plies are reinforcing layers as the geometric objects are tensioned together with reinforcing strands (col. 5, lines 35-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ inner reinforcing plies motivated to improve the impact strength of the laminate.

As to claim 64, Bjorksten differs and does not teach reinforcing plies made from the materials claimed. Cook teaches the geometric objects are tensioned together with fiber strands. The fiber strands are interwoven around so as to support each rod **70** in tension against impact (col. 6, lines 1-15). The fiber strands, shown in Fig. 4 as **76** are equated with Applicants claimed single fibre reinforcement and/or woven rovings.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a fiber reinforcement motivated to improve the impact strength of the laminate.

As to claim 65, Bjorksten teaches spherical shaped dissipating elements.

As to claim 66, Bjorksten teaches the dissipating elements can be made from steel, fiberglass or titanium (claims 5-7).

As to claim 67, Bjorksten shows an arrangement of dissipating ply elements that are in a unidirectional, cross-ply and symmetric, balanced as shown in the Figure above.

As to claim 68, Bjorksten differs and does not teach a polymer matrix formed from one of the claimed compounds. Hollis teaches the polymer matrix which fills the voids can be of a epoxy-urethane elastomer (col. 10, lines 25-28).

As to claim 69, Bjorksten teaches the outer layers are comprised of plastic material or a metal foil (col. 1, lines 46-49).

As to claim 70, Bjorksten differs and does not teach an additional layer on the outer layers of the composite laminate. Hollis teaches outer layers of multilayered cloth that can be aluminized (col. 7, lines 45-51). It would have been obvious to one of ordinary skill in the art to add additional outer layers motivated to improve the strength of the laminate and provide the desired outer surface.

As to claim 71, Bjorksten teaches the laminate is created to dissipate force in a parallel direction (col. 1, lines 65-72). The dissipation of force in the laminate of

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Bjorksten is equated with Applicant's claim 71 where the loading is redistributed in a longitudinal direction to the main axis of said reinforcement plies.

As to claims 72 and 73, Bjorksten, Cook and Hollis differs and do not teach the impact strength or the density of the laminate. However as the references are directed to laminates intended to reduce the impact of a load, it would have been obvious to optimize the claimed properties motivated to achieve the desire strength in the laminate.

As to claim 74, Bjorksten differs and does not teach an additional layer on the outer layers of the composite laminate. Hollis teaches outer layers of multilayered cloth that can be aluminized and can have a plastic film incorporated into the laminate (col. 7, lines 45-51). It would have been obvious to one of ordinary skill in the art to add additional outer layers motivated to improve the strength of the laminate and provide the desired outer surface.

As to claim 75, Bjorksten differs and does not teach reinforcing plies made from the materials claimed. Cook teaches the geometric objects are tensioned together with fiber strands. The fiber strands are interwoven around so as to support each rod **70** in tension against impact (col. 6, lines 1-15). The fiber strands, shown in Fig. 4 as **76** are equated with Applicants claimed single fibre reinforcement and/or woven rovings.

As to claim 76, Bjorksten teaches the dissipating elements can be made from steel, fiberglass or titanium (claims 5-7).

As to claim 77, Bjorksten differs and does not teach a polymer matrix formed from one of the claimed compounds. Hollis teaches the polymer matrix which fills the voids can be of a epoxy-urethane elastomer (col. 10, lines 25-28).

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As to claim 78, Bjorksten teaches the outer layer are made from a plastic material (col. 1, lines 45-47).

As to claim 79 and 80, the combination of Bjorksten, Cooke and Hollis teach the claimed features which have been recited in the above action.

Bjorksten teaches the features of a first and second outer layers **1** and **4** and inner layers **2**, **3** and **10**. Bjorksten teaches at least two inner plies. Bjorksten teaches dissipating elements in the form of spherical calottes **2**, **4** and **5**. (col. 1, lines 45-64) and shown in Fig. below.

Cook teaches the inner plies are reinforcing layers as the geometric objects are tensioned together with reinforcing strands (col. 5, lines 35-39).

Bjorksten and Cook teach at least two dissipating elements between the reinforcing plies and the elements direct the force or loading in a parallel or longitudinal direction. The dissipating elements are spherical.

Bjorksten and Cook teach polymer adhesive is used on parts of the plies. Hollis teaches the polymer matrix is placed only in the voids of the dissipating elements.

Cook and Hollis teach additional outer layers of cloth, plastic or foam.

Bjorksten and Cook and Hollis teach the dissipating plies are arranged in a balanced, unidirectional symmetric pattern to deflect oncoming force or impact.

It would have been obvious to one of ordinary skill in the art to combine the features of Bjorksten, Cook and Hollis motivated to produce a laminate with impact resistance.

Response to Arguments

3. Applicant's amendments and arguments with respect to claim 61-80 have been considered but are moot in view of the new ground(s) of rejection. Applicants amended claims to limit the "polymer matrix is absent between sections of said outer layers and said at least two inner plies". As a result of the amendment the previous 35 USC 102(b) and 35 USC 103 rejection of claims 61-80 over Neal has been withdrawn.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER STEELE whose telephone number is

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(571)272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./
Examiner, Art Unit 1794

/Elizabeth M. Cole/
Primary Examiner, Art Unit 1794

5/21/2009